

## ABSTRACT

### [Problems]

A method of and an apparatus for continuous sub-critical water decomposition treatment for material to be processed containing solid matter are provided, which are  
5 capable of controlling decomposition reaction of the material to be processed and suitable for large-scale operations. The method and the apparatus are also capable of minimizing equipment costs and selectively producing desired useful substances at high yield rates.

### [Means to Solve the Problems]

10 Material to be processed is grinded in advance into particles, which are mixed with water to prepare slurry. The slurry is sent to a compressing means (1) through a pipe and is compressed. Next, the compressed slurry is sent to a heating means 2 and heated, and is brought into a sub-critical state. The slurry in a sub-critical condition is introduced through an inlet (8) into a bottom part of a reactor (3). In the reactor (3) a  
15 fixed bed, a fluidized bed, and a sub-critical water dissolution part are formed in that order from the bottom. One(s) of outlets (101) to 106 provided at top and side portions of the reactor 3 is/are selected so that the sub-critical water dissolution part is taken out therethrough, whereby the residence time of the sub-critical water is adjusted and thus the reaction time of sub-critical water decomposition of the material to be processed is  
20 adjusted.